



RESEARCH AND
DEVELOPMENT SOLUTIONS, LLC

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Pre-Qualification to Conduct Stress Testing of LED Integral Lamps

Research and Development Solutions, LLC, (RDS), on behalf of the US Department of Energy's Building Technologies Program, is requesting capability statements for the purpose of pre-qualifying research facilities and/or testing laboratories for developing and conducting stress testing of LED-based integral lamps. RDS will establish contractual vehicles with qualified organizations for the development and execution of various test procedures designed to assess performance of specific LED integral lamp products under a range of operating conditions, and to identify failure modes and reduced performance induced by those conditions. Both catastrophic failure and diminished performance (light output, noticeable color shifts, and changes in luminous intensity distribution) are to be considered.

This request for capability statements is for planning purposes only, and shall not be construed as a solicitation or as an obligation on the part of RDS to award a specific number of tests or a specific amount of funding to qualified organizations.

RDS will pre-qualify organizations for future stress testing of LED integral lamp products based on four general categories:

1. Experience and capabilities in stress testing of electrical and electronic equipment such as LEDs, power supplies, drive electronics, printed circuit boards, and semiconductors; experience and capabilities in testing lamps with integral ballasts/drive electronics.
2. Demonstration of facilities and equipment with appropriate testing hardware and software, calibration devices, and documented procedures and test methods necessary for stress testing of electrical and electronic components.
3. Demonstration of facilities and equipment needed to conduct spot photometric, spectroradiometric, and/or colorimetry measurements of the LED integral lamp products under test.
4. Personnel – Staff with the skills and expertise needed to successfully develop, conduct, and interpret/analyze results of stress tests on LED products

Organizations should include in their responses detailed information covering testing equipment and its limitations for the types of tests they propose to qualify for, such as:

- High ambient temperature
- Low ambient temperature
- Voltage and current fluctuation
- High humidity environment
- Frequent switching
- Electro-magnetic interference
- Vibration
- Structural fatigue
- Additional stress tests proposed by organization

For each type of equipment that applies, please provide:

- Complete description of equipment
- Calibration and reporting history
- Measurement limitations

Capability statements should be mailed to the following address:

Research and Development Services, LLC

Attn: Kimberly A. Nix

3604 Collins Ferry Road, Suite 200

Morgantown, WV 26505

Questions should be addressed to Kimberly A. Nix at telephone 304-225-5102 or by e-mail at knix@egginc.com.

Background

The Bright Tomorrow Lighting Competition (L Prize™), as authorized in the Energy Independence and Security Act of 2007 (EISA); Subtitle E; Section 655, is intended to encourage development and deployment of highly energy efficient solid-state lighting (SSL) products to replace several of the most common lighting products currently used in the United States, including 60-watt A19 incandescent and PAR 38 halogen incandescent lamps. To significantly impact the national market and lighting use, the SSL products selected must perform similarly to the incandescent lamps they are intended to replace in terms of color appearance, light output, light distribution, and lamp shape, size, form factor, appearance and operating environment. They must be reliable, available through normal market channels, and competitively priced.

Description of Stress Testing Task

Products submitted to the L Prize competition will be tested for light output and other photometric characteristics, and will undergo long term lumen maintenance testing. Photometric and lumen maintenance testing facilities and capabilities are addressed separately from this document. In addition, stress testing will be conducted on submitted lamp samples to identify potential failure modes. Tests may include but are not limited to the following:

- High ambient temperature
- Voltage and current fluctuation
- High humidity environment
- Frequent switching
- Electro-magnetic interference